APPLICATION FOR

RURAL HEALTH CARE NETWORK PILOT PROGRAM PROJECT

WC Docket No. 02-60

A Proposal
Presented for Consideration
To the
The Federal Communications Commission
Washington, DC 20554

Submitted by
Health Information Exchange of Montana, Inc. (HIEM)
310 Sunnyview Lane
Kalispell, Montana 59901

May 7, 2007

Executive Summary

The *Health Information Exchange of Montana, Inc.* (HIEM) is a rural health network initiated by five independently owned and operated hospitals who have formally come together to address their shared unique geographic and technological challenges in order to exchange basic medical information and expand telehealth applications in northwest and northcentral Montana. It is a non-profit organization comprised solely of 501(c)(3) healthcare organizations and supported by dozens of affiliate partners within our service area, across our region and throughout Montana.

The HIEM has successfully deployed several notable telehealth applications in the past seven years. Each hospital is linked into a common Picture Archiving & Communications System (PACs) and work with centralized radiologists in the network hub of Kalispell. Three of the hospitals share hospital information systems. Video conferencing is available throughout the network, and a number of telemedicine patient-care examination facilities have been implemented. This has been accomplished through collaborative governance of shared objectives, and by ensuring financial sustainability through each participant paying appropriate fees for these services.

In 2006, the Founding Members of the HIEM, who had worked together on an informal basis for so long, decided to formalize the network into its own 501c3 organization. Today the HIEM has seven member organizations, each of which represent dozens of other healthcare providers in each of their respective communities. Healthcare goals presently underway include the expansion of the PACs system and telemedicine exam facilities, implementation of telepharmacy, teledentisty, telemental health services and expansion of shared electronic health records throughout the network region.

Unfortunately, access to affordable, reliable bandwidth has been a serious constraint in the accomplishment of these objectives. Some communities have no fiber at all and microwave relays are at capacity. Without assistance to expand bandwidth, efforts to improve rural healthcare will be stalled.

The HIEM proposes a bold plan to build fiber to each member facility. This will provide needed bandwidth for expansion of telehealth applications well into the future. We propose to pay for costs not covered by the pilot program as well as ongoing costs to sustain the network by partnering with increasing numbers of healthcare providers, health educators, researchers, public health programs, and local telecommunications carriers.

Proposal

For ease of review, this proposal has been organized into sections titled with the questions outlined in the guidelines to the *FCC Rural Health Care Pilot Program* order.

1. **Identify the organization that will be legally and financially responsible for the conduct of activities supported by the fund.**

Organization Overview

The *Health Information Exchange of Montana, Inc.* (HIEM) is a rural health network initiated by five independently owned and operated hospitals who have formally come together to address their shared unique geographic and technological challenges in order to exchange basic medical information and expand telehealth applications in northwest and northcentral Montana. It is a non-profit organization comprised solely of 501(c)(3) healthcare organizations and supported by dozens of affiliate partners within our service area, across our region and throughout Montana.

HIEM Principal Office Location

The principal office location of the HIEM is 310 Sunnyview Lane, Kalispell, Montana 59911.

Tax-Exempt and Non-Profit Status

This Corporation is organized and operated exclusively for charitable, educational, and scientific purposes. HIEM was created as a public benefit corporation and was incorporated by the State of Montana in October of 2006. It is created solely as an organization described in section 501(c)(3) of the Internal Revenue Code of 1986 and is exempt from taxation under section 501(a) of the Code. The organization is also created solely for the purposes described in Section 201 of the Montana Nonprofit Corporation Act.

Board Management

The direction and management of the affairs of the HIEM and the control and the disposition of its properties and funds is vested in the Board of Directors. This Board consists of not less than 3 persons and currently includes the following members.

Organization Name	Type of Member	Current Director holding Organization's Seat(s)
Northwest Healthcare	Founding	Charles Pearce, CFO
		Dr. Jonathan Anderson
St. John's Lutheran Hospital	Founding	Bill Patten, CEO

		Jeanie Gentry, VP
St. Luke Hospital	Founding	Shane Roberts, CEO
		Steve Todd, COO
Northern Rockies Medical Center	Founding	Cherie Taylor, CEO
		Gerald Ebelt, Board Chair
Glacier County Community Health Center	Founding	John Maher, CEO
		Kim Greenwald, Board Member
North Valley Hospital	Elected Partner	Traci Waugh, HIM Director
Lincoln County Community Health Center (including clinic locations at Troy and Eureka)	Elected Partner	Maria Clemons, CEO

This Board assigns projects and oversees the work of staff contracted to perform various functions for the HIEM network. It has met at least monthly for the past 18 months during the formation and start-up of the network and according to its by-laws will continue to meet monthly in the future.

As leaders of the organizations making up the HIEM network, each Director has a high personal vested interest in the success of the HIEM projects and the wise use of all resources entrusted to the HIEM.

Management

The HIEM Directors will spearhead, implement and manage all aspects of this proposed pilot project within the existing five county service-areas.

At present, Candy Deruchia, the Director of Computer Information Systems at Northwest Healthcare in Kalispell, serves as acting Technical Director of Operations for the HIEM and reports directly to the HIEM Board of Directors. Several other technical staff of Northwest Healthcare report to her for HIEM projects. As funding increases and workload expands, additional staff will be either contracted or employed by the HIEM to accomplish its objectives.

2. Identify the goals and objectives of the proposed network.

Primary Goal

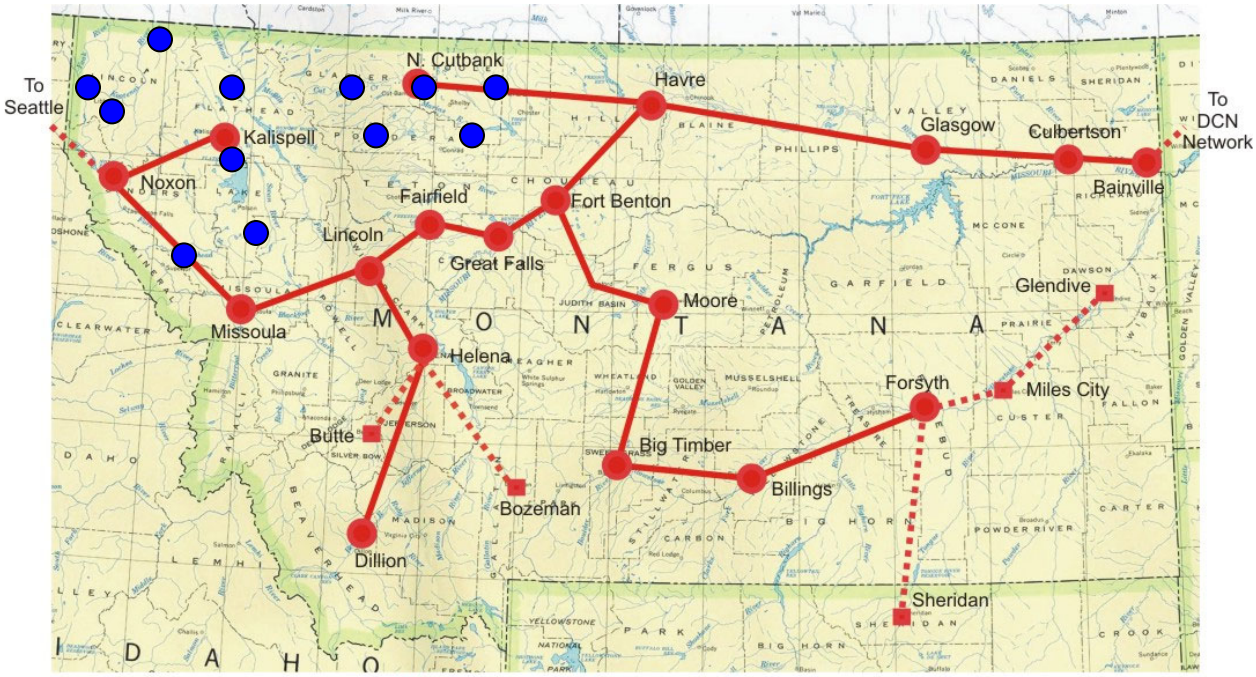
The primary goal of the HIEM proposed *Rural Health Care Pilot Program* is to establish a secure network with sufficient bandwidth and essential connectivity between each HIEM member and qualified end-user to more readily support high bandwidth healthcare applications. These applications include:

- Shared patient electronic health records.
- Picture Archiving & Communications Systems (PACs).
- Telemedicine exam facilities for distance physician-to-patient exams/consults.
- Homeland Security initiatives and Disaster Readiness.
- Expanded public health and epidemiological databases.
- Clinical research functions with chronic disease populations.
- Improved health education.

Present Connectivity Status & Challenges

As the HIEM has made plans to expand in all of these healthcare applications, the lack of affordable, reliable bandwidth has been a serious constraint in the accomplishment of these objectives. A telecommunications consulting service recently conducted an in-depth network survey on behalf of the HIEM. They found that some communities have no fiber at all and microwave relays are at capacity. Without assistance to expand bandwidth, efforts to improve rural healthcare will be stalled.

The map below shows the current areas of Montana which have some amount of fiber backbone connectivity (red lines connecting red dot nodes). As the map indicates, parts of northwest and north central Montana have no fiber connectivity. The blue dots indicate sites currently trying to connect to the HIEM network.



Because of the unique mountainous terrain, weather, distances associated with travel for healthcare and a lack of essential telecommunications infrastructure in northwest and north central, the HIEM service-area challenges remain among the most significant in the state of Montana. These basic, natural challenges continue to impede HIEM service area health care providers from efficiently implementing more telehealth applications.

Additionally, Montana remains isolated from other national healthcare and research networks such as Internet 2 and National Lambda Rail (NLR).

This map shows the Internet 2 Consortium Network nodes. The National Lambda Rail (NLR) Network configuration is similar. The most important feature to note is that this dedicated nationwide backbone, completely bypasses Montana, with the closest nodes to our region and our state located in Seattle, Washington or Boise, Idaho.

The HIEM believes that with the completion of the *Rural Health Care Pilot Project* network proposed, an efficient, reliable and natural gateway for Internet 2 and NLR connectivity would be opened up to the entire State of Montana.

Vulnerable Populations Currently Served Within the HIEM

The population served by the HIEM faces some unique challenges. First of all, the size and rural/frontier make-up of the region exposes the population to numerous vulnerabilities. The mountainous terrain and often dangerous seasonal travel makes day-to-day travel throughout this rural/frontier land uneconomical and serves as a significant barrier to residents' attempts to access goods and services, including healthcare. Infrequent medical visits are largely accountable for the many health disparities that exist in the area.

Demographics	Flathead County	Glacier County	Lake County	Lincoln County	Montana
Population	77,441	13,182	26,984	18,722	910,372
Race					
White	74,847	4,591	19,487	18,082	829,147
American Indian	905	8,276	6,545	245	58,167
Other	1,689	315	952	395	23,058
% age 65+	13.1	9.9	14.8	17.1	13.6
% of pop < 100% poverty	13	27.3	18.7	19.2	14.6
% of pop < 200% poverty	35	57	47	48	37
Unemployment Rate	6.4	11.7	6.7	15.9	4.7
Median Household Income	$34,466	$27,921	$28,740	$26,754	$33,024
Per Capita Income	$25,583	$18,192	$19,545	$19,559	$24,831
% Medicaid Eligible Population	12.1	36.1	19.3	19.3	12.3
% Low Birth Weight Babies	6.1	5.1	7.6	5.4	6.8
Cancer Incidence Rate per 100,000	463.4	462.2	422.8	510.3	474.3
Heart Disease Death Rate per 100,000	226.9	162.4	228	279.3	221.2
Motor Vehicle Accident Death Rate per 100,000	20.6	65	45.5	33	24.5
Suicide Rate per 100,000	20.4	12.4	23.5	21.3	18.5
Traumatic Injury Death Rate	55.5	72.7	64.4	70.4	55.6

Distance also has detrimental effects on the regions economic base. The labor market largely consists of low paying blue-collar jobs, many of which lack healthcare benefits. As indicated in the chart above income levels in the region are significantly lower than the state and national average.

Lastly, there are two Native American Indian Reservations in the proposed service area. The Flathead Reservation is home to roughly 27,000 residents and the Blackfeet Reservation is home to over 10,100 residents. Both reservations are confronted by numerous health and social problems.

Each network goal developed by HIEM mirror the goals set forth in Healthy People 2010: the quality of life, eliminating health disparities, and maintaining a quality health continuum within communities. Many of the

Healthy People 2010's leading health indicators will be reviewed for the five county service area during the strategic planning process. Indicators of particular interest to our area due to dismal statistics are the lack of physical activity which works closely with obesity, tobacco use, substance abuse, responsible sexual behavior, mental health, and the access to health care. By offering safer, more efficient, higher quality care, the network will address many of those clinical interventions designed to reduce or eliminate medical errors and adverse events.

Project Objectives

HIEM seeks to accomplish the goals of the pilot project established by the FCC to develop a *Rural Health Care Pilot Program* by addressing several areas.

A. Fiber will be built to each HIEM member facility. This will occur in phases, beginning with an in-depth engineering diagram for the network construction.
B. Hardware will be placed at each member facility to allow utilization of bandwidth for that facility, as well as other healthcare providers in the service community.
C. Healthcare applications will be jointly purchased, implemented and maintained across the network for economies of scale.
D. This will be done in a long-term financially sustainable way.

Complementary Efforts across Montana Which Support HIEM Goals

As our two-year plan seeks to bring healthcare providers who deliver care in this unique geographic location and service area to a common and improved level which allows these providers a consistent level of connectivity, we also seek to support the specific efforts and infrastructure needs of our health care colleagues beyond the HIEM service area. We recognize, support and applaud the significant role these health care providers play in providing critical and redundant support to every health care provider currently delivering care within the HIEM network.

However, overall many providers beyond the HIEM service area currently possess and deploy a measurably more sophisticated and better integrated, unified health information technology infrastructure.

Therefore our proposal seeks to address the unique concerns and challenges which persist in the HIEM service area. Additionally we seek to bring our service area to a more common level for the benefit of patients and to facilitate long-term telehealth and telemedicine network goals within this region and across the State as they continue to evolve.

We support the significant efforts and ongoing needs of health care providers such as the Montana Healthcare Telecommunication Alliance (MHTA) who address unique needs beyond the HIEM network, but who also seek funding from the FCC for a disparate yet apparently complementary project in south east and south central Montana.

Currently HIEM recognizes the MHTA seeks FCC assistance and guidance to study network planning for their area and require ten (10) DS3 Routers which will be strategically placed throughout the state to ultimately strengthen the long-term capacity of networking activities between the HIEM and these other providers located across Montana's large and geographically diverse landscape.

We encourage the FCC to thoughtfully address the disparate strengths of this apparently complementary project, while considering the equally unique and pressing needs for substantive assistance in the HIEM service area, located at the opposite far corner of Montana, for resources needed to address the essential needs of medically-underserved populations living in north west and north central Montana.

3. Estimate the total costs of the Network for each year.

A Secure Fiber Network

Again, the primary goal of the HIEM-proposed *Rural Health Care Pilot Program* is to establish a secure network with sufficient bandwidth and essential connectivity between each HIEM member and qualified end-user to more readily support high bandwidth applications, which may also support Homeland Security initiatives and Disaster Readiness needs, while providing easy, reliable, essential, access for every network member and end-user.

Therefore, HIEM anticipates costs of **$26 million** for development, implementation and deployment of all aspects related to developing this redundant fiber network in north west and north central Montana.

We recognize the Commission has called for two-year proposals to develop a *Rural Health Care Pilot Project*. However, given the scope of this project and existing limitations here in the field, HIEM anticipates deployment of a project over five phases and five years.

Projected Project Costs

Year One:

$9 million

This year-long phase will provide the initial high capacity connections among HIEM member nodes on the western side of the mountains. Each facility will be fashioned with equipment required to utilize and terminate a fiber optic cable. Approximately 265 miles of fiber optic cable will be laid in this phase. All fiber optic runs in excess of 35 miles will be bisected and supported with a telecommunications hut.

1. Phase one also includes bidding and completion of a comprehensive engineering study based in part upon the preliminary study completed in the past 20 days by HIEM. This study will provide gross level design objectives, and more detailed equipment purchase needs.

Year Two:

$7 million

HIEM seeks to accomplish Phase 2 in one year and will provide the initial high capacity connections among HIEM member nodes on the eastern side of the mountains. Each facility will be fashioned with equipment required to utilize and terminate a fiber optic cable. Approximately 90 miles of fiber optic cable will be laid in this phase. All fiber optic runs in excess of 35 miles will be bisected and supported with a telecommunications hut.

Year Three:
$6 million
In Year 3/Phase 3 HIEM intends to provide a physical fiber path which will facilitate connectivity between the Western and Easter Arc. All facilities provided with fiber connectivity on the Western Arc will now be able to interchange data with all the facilities on the Eastern Arc. Approximately 100 miles of fiber optic cable will be laid in this phase.

Year Four:
$3 million
In Year 4/Phase 4 HIEM intends to provide a true redundant physical path on the western side of the mountains following driving routes from Libby to Plains. This path will serve to accommodate and even traffic flows at all times and will accommodate all traffic flows should service, for any reason, be interrupted on the paths provided during the Western Arc phase of the project. Approximately 115 miles of fiber optic cable will be laid in this phase.

Year Five:
$1 million
Year5/Phase 5 will provide a true redundant physical path on the eastern side of the mountains following driving routes from Heart Butte (a reservation community geographically and technologically isolated, located 26 miles south of Browning) to Conrad. This path will serve to accommodate and even traffic flows at all times and will accommodate all traffic flows should service, for any reason, be interrupted on the paths provided during the Eastern Arc phase of the project. Approximately 93 miles of fiber optic cable will be laid in this phase.

Other Options Considered
Additionally HIEM carefully considered several network development alternatives which include combinations of build and rent scenarios for deployment of this project.

HIEM is pleased to discuss these combined approaches with the FCC at the pleasure of the Commission to further elaborate on the issues which make these scenarios cost prohibitive. For the Commission's benefit HIEM has thoroughly considered the ramifications of each scenario before making this final recommendation to the Commission today.

The HIEM service area faces a number of severe hurdles uncommon to other service-areas within Montana. These impediments can create costly scenarios and include: dwindling capital investments made by rural providers for rural telecommunications field equipment, a lack of essential infrastructure, aging

telecommunications equipment in the field, uncommon carrier distances, complex build scenarios complicated by short construction seasons, severe weather, difficult terrain, severe elevation gains and decreases and landscapes which include traversing the Continental Divide, rock slides and avalanche, high and sudden winds, tunneling through rock and mountains, beneath rivers, through plains, a variety of federal, state, and private lands as well as the sovereign lands of the Blackfeet and Flathead reservations. An additional challenge is the distance to Internet 2 or National Lambda Rail nodes.

A build scenario also supports a robust revenue stream to maintain and support these long-term capital investments made by the FCC for this project. Therefore, HIEM determines that a build scenario best meets the needs of our network members and allows the HIEM to complete measurable objectives of this proposal on behalf of the FCC.

Again, it is the primary goal of this proposal to establish a secure network for the FCC which allows for measurable deliverables within Year One and Year Two which include making available sufficient bandwidth and essential connectivity between each HIEM member and qualified end-users.

Therefore HIEM seeks to deploy a network which supports high bandwidth applications for health information technology, medical and educational research. HIEM also intends to be available to support Homeland Security initiatives and Disaster Readiness needs, while still providing easy, reliable, essential, access for every network member and end-user and others who HIEM may enjoin in partnership across Montana, the region and across the nation.

The preliminary study made for this project proposal included field and site visits over the past twenty days to every potential HIEM node or primary user. These visits were made by HIEM, technology and engineering staff. These visits included lengthy interviews and discussions with senior members of each organization, technology staff, providers and other relevant parties, including each HIEM participant within the proposed network.

The HIEM asks the FCC's consideration for an award of $26 million to deploy and implement this full-featured proposal over five phases.

Additional Background Regarding Costs Which Affect This Proposal

A Preliminary Investigation of Proposed Network Service-Area

Once again, in preparing this proposal on behalf of the FCC, the HIEM implemented a thorough pre-engineering study during the past 20 days, conducted by HIEM, technology and engineering staff designated by the

HIEM to better determine the current status of overall network connectivity between HIEM members and other potential network members.

Staff accomplished this inventory in a series of comprehensive interviews completed in the field during a week-long tour of each potential node location, and additional discussions with other relevant parties.

In the proposal HIEM brings forward for consideration by the FCC, HIEM designates that the location of each primary member organization or facility should essentially become a primary node for this proposed *Rural Health Care Pilot Program* network.

This pre-engineering groundwork is only meant to be utilized as a tool to determine the current parameters of the technology infrastructure in our service area, as well as the measurable impediments to connectivity in this same area.

The HIEM will fully utilize this groundwork to develop a complete engineering study which will drive the development of the proposed network. However, this pre-engineering snapshot also allows the HIEM to more accurately and responsibly develop the project's engineering needs and the suite of design activities which will emerge going forward.

Ultimately, this pre-engineering groundwork allows the HIEM to better determine on behalf of the FCC a correct scale, scope and depth for this project.

Again, the HIEM is a non-profit organization comprised of rural health care providers in Montana. HIEM possesses limited resources and serves rural and medically underserved Montanans. The HIEM takes seriously the opportunity to promote a bold, comprehensive and creative, but well-drawn proposal to the Commission to improve the delivery of quality medicine and care to Montanans.

Therefore in a sincere effort to most thoroughly vet our proposal on behalf of the FCC, HIEM made a specific decision to self-fund this initial groundwork, in an effort to put forth the very best possible proposal for the Commission and the Commissioners who have graciously sponsored this visionary pilot program.

Network Goals Addressed by the Proposal and Impacting Project Costs

During the course of study of each facility, HIEM staff assessed there were great measurable disparities regarding each organizations maintenance

routines, physical plant and communications closets at each location. In fact, no single HIEM member currently appears to possess equipment or connectivity to fully support the projected needs of this project at any single location.

Several network goals were studied at each potential node location. These include:

- How to accurately determine bandwidth requirements of the primary telehealth application, which may ultimately be used by Rural *Health Care Pilot Program* participants.
- How to determine the current sustained bandwidth presently supplied to each node on the network:
    a. What physical medium is used to supply the bandwidth
    b. What technology is used to provide the bandwidth (DSL, ISDN, etc…?)
    c. Who is the telecommunications provider?
    d. What is the telecommunications providers' current fee for these services?
- How to determine for each node the necessary maximum sustained bandwidth that can be provided to each node of the network
- What physical medium can the telecommunications provider use to service the location?
- What technologies will be used to provide bandwidth over the medium?
- What may telecommunications provider likely charge for this enhanced connectivity?

- Finally, we sought to determine for each node if physical construction of fiber cable plants may be required or preferred to that of the solution indicated by the present telecommunications provider at the node's location. This included:
- Estimating distances to the nearest network access points.
- Determining who is the operator of the nearest existing network point
- For each node, determining the number and connectivity of its primary sub-nodes. An example: How many buildings are at each network participant location
- Can these buildings be connected via fiber optic cable or some other means such as laser technology?
- Should it be determined that the nodes remain the property of HIEM but utilized by the facility we strongly recommend painting the node a bright distinctive and easily distinguishable color in order to differentiate the equipment from anything that is presently in place within the facilities closet and labeled clearly as the property of HIEM. In this scenario the

node should remain locked and access granted only to authorize HIEM personnel.

Final Considerations

The HIEM endeavors to build a true redundant loop network.

This pilot project proposes that each node identified for construction of this network remain the property of HIEM. The HIEM will provide each facility with a bright and distinctively painted color in order to differentiate this pilot project equipment from anything that is presently in place within a network member's facilities closet.

This equipment and the painted node box will be clearly labeled as the property of HIEM. The node will likely remain locked and access granted only to authorized HIEM personnel.

Additionally, no existing connections should be eliminated until any new network connectivity is installed and tested.

Going forward, as part of any future engineering study the HIEM will take all needed steps to ensure proper easements are attained correctly and that each build location will maintain sufficient access for commercial power needs and essential battery backup.

Finally, all budget figures related to this aspect of the project will also account for land use fees or additional poll usage fees.

4. Describe how for-profit network participants will pay their fair share of the network costs.

Currently each member of the HIEM maintains 501(c)(3) statuses. Therefore the current fee structure for membership reflects a not for profit rate for all current services.

In past telehealth projects, the HIEM network has categorized participants in three ways:

- HIEM Founding Members
- Non-Members Not-For-Profits
- Non-Member For-Profits

Each level pays a different amount for services provided by the HIEM. This same categorization could likely be applied to a fee structure that will be established on behalf of the HIEM for accessing the future telecommunications network and related network services.

5. Identify the source of financial support and anticipated revenues that will pay for costs not covered by the fund.

The HIEM hopes to continue to study additional opportunities to generate matching funds as dictated by the grant, particularly if HIEM is able to receive funding and support to construct a true redundant loop network. However these are opportunities to generate revenue which HIEM has identified today:

1. First, HIEM anticipates assessing each network member a rental fee for node equipment and a service fee for bandwidth. Additionally, HIEM will also provide miscellaneous contracted network services to each HIEM member and therefore also seeks to become a provider of miscellaneous network services and a clearing house for network trouble tickets for HIEM network members and users.

2. HIEM may also seek to create comprehensive service agreements network service agreement with HIEM to maintain not only their connection to the HIEM network but also maintain each member internal phone and computer networks. HIEM could begin to collect revenue from its members to sustain essential operations, allowing members to benefit from consistent service and a common base of experience, knowledge and expertise regarding equipment. For example, it may become known by HIEM network staff that one node location has had a bad equipment experience and can eliminate duplication of a bad experience at a second location.

   The proposed HIEM network as a whole benefits as HIEM now supports the evolution of the individual member's internal networks to a consistently enforced set of implementation and labeling standards.

   Eventually this could foster uniformity and interconnectivity of systems within the individual organization, the network itself, across regions and across the nation. Ultimately this may allow for greater levels of integration. Network members would be able to leverage scale in purchasing and could disperse costs of costly network and administrative services. Additionally, the smaller locations could greatly benefit from the shared expertise and practices that could be developed by HIEM on their behalf.

3. HIEM could also investigate the opportunity to begin providing service as an ISP to its members reducing network access costs.

4. HIEM could actually evolve to become a carrier. The network connectivity speeds HIEM proposes approach (OC12+). Therefore, HIEM could easily make commonly available service for phone, cable and internet services available to users who meet the qualifications for any other member or user of HIEM services and those who meet the qualifying definition of health care providers as determined by the FCC guidelines for this pilot project. For example HIEM could collaborate with a local ISP to provide internet services to the HIEM for facilities exchange.

   As this fiber backbone for the HIEM network is engineered, this network could be built to contain "dark" or unutilized fiber optic strands. Ultimately, this could allow for network traffic to not only be isolated logically, via router software configurations, but also physically by lighting spare "dark" fiber within the backbone cable itself. HIEM may be able to test and utilize this potential opportunity expressly by carrying traffic for other operating companies either already servicing an area, or looking to expand to another area or region, where a HIEM node resides.

5. Collaborative maintenance contracts between communities and counties with local telecommunications providers could be assessed to maintain and support the HIEM network.

6. The pilot project proposed by HIEM focuses on a bold strategy to build a true redundant network and will also likely create a unique homogenous, contiguous and controlled environment which can be leveraged to support IT and telehealth related research. Network bandwidth could be isolated or provisioned to be sold to companies and researchers who wish to experiment and test-deploy products, particularly those application that are affected by latency issues or designed to operate simultaneously at multiple locations. This option would be in keeping with the health mission of the HIEM members but would require marketing efforts within the academic and commercial research communities.

7. Finally, the network pilot project proposed by the HIEM indicates significant capacity to move impressive volumes of data. This new network could therefore serve the local, regional, statewide and international health community with health care specific records & image storage and disaster recovery services.

   Data centers of this type would likely require either partner participation or some additional capital expenditures and marketing efforts to qualified users.

6. List the health care facilities that will be included in the network.

HIEM Members

Kalispell Regional Medical Center
310 Sunnyview Lane
Kalispell, MT 59901
406-752-1724

St. Johns Lutheran Hospital
350 Louisiana Ave.
Libby, MT 59923
406-293-0148

St. Luke's Community Health Center
107 6th Avenue Southwest
Ronan, MT 59864
406 676-4441

North Valley Hospital
6575 Hwy 93 S
Whitefish, MT 59937
406-863-3500

Northern Rockies Medical Center
802 2nd Street Southeast
Cut Bank, MT 59427
406-873-2251

Glacier Community Health Clinic
519 East Main Street
Cut Bank, Montana 59427-3015
406-873-5670

Community Health Center
711 California Ave
Libby, MT 59923
406-293-3755

HIEM Non-Member Affiliates, Partners and Supporters

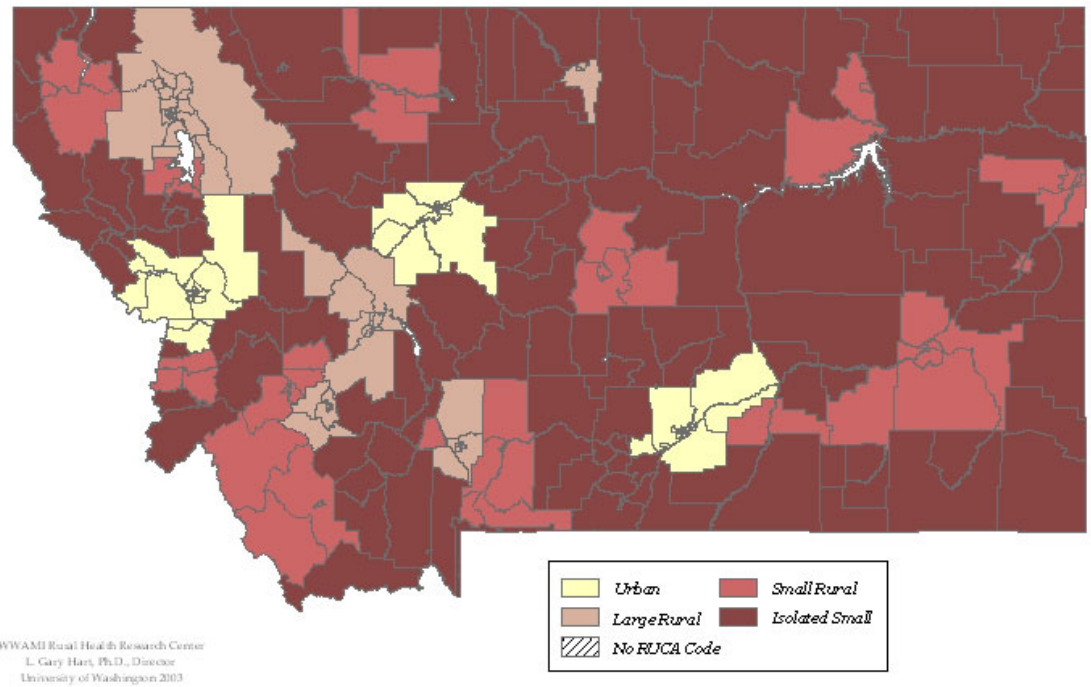
Approximately 200 other healthcare providers practice in the areas served by the HIEM members. Each of these would have the ability to access the HIEM network services for appropriate fees.

7. Provide the address, zip code, Rural Urban Commuting Area (RUCA) code and phone number for each health care facility participating in the network.

The size and rural/frontier make-up of the region presents some unique challenges to the implementation of any telehealth applications. The HIEM service area spans more than 45,000 square miles. According to Census 2000, approximately 144,000 people reside within the region, which equals a population density of 3.2 persons per mile, a small fraction of the national average of 79.6.

In addition to the vast essentially rural nature of the HIEM, our network is also located in extremely mountainous and rugged topography. This unique region contains numerous state parks, nature preserves, national forest, Glacier National Park, two Indian reservations and abuts the U.S.-Canadian border as well as the Montana-Idaho border, all of which can create unique challenges and opportunities for developing direct, sustained and economical connectivity for all information technology projects including health-related proposals.

The following map and list shows the RUCA Designations of the HIEM network members.



HIEM Member Communities

Community	Zip Code	RUCA Code	Phone Number
Kalispell Regional Medical Center 310 Sunnyview Lane Kalispell, MT 59901	59901	4	406-752-1724
North Valley Hospital 6575 Hwy 93 S Libby Whitefish, MT	59937	7.4	406-863-3500
St. Johns Lutheran Hospital 350 Louisiana Ave. Libby, MT	59923	7	406-293-0148

St. Luke's Community Health Ctr. 107 6th Avenue Southwest Ronan, MT 59864	59864	10	406-676-4441
Northern Rockies Medical Ctr. 802 2nd Street Southeast Cut Bank, MT 59427	59427	7	406-873-2251
Glacier Community Health Clinic 519 East Main Street Cut Bank, Montana 59427-3015	59427	7	406-873-5670
Community Health Center 711 California Ave Libby, MT 59923	59923	7	406-293-3755
Community Health Center 308 Callahan Troy, MT 59923	59935	10.6	406-293-3755
Community Health Center 100 Dewey Avenue Eureka, Montana 59917	59917	10	406-293-3755

Affiliated Communities:

Browning	59417	7
Shelby	59474	7
Conrad	59425	7
Plains	59859	10

8. Indicate previous experience in developing and managing telemedicine programs.

Institute of Medicine's Report on Patient Care Aims and HIEM Collaboration

According to the Institute of Medicine's *"Crossing the Quality Chasm"* report, there are six aims which healthcare providers must improve upon for the

sake of the patients: Safety, Effectiveness, Patient-centeredness, Timeliness, Efficiency, and Equity.

The HIEM has a proven track-record of using telehealth solutions to impact each of these six aims. We have seen patients travel less, avoid duplicated tests, get answers faster, and even have their lives saved because of the PAC's system, the telemedicine, and the information we currently have in our network.

In another important IOM report, *"Quality Through Collaboration: The Future of Rural Health Care,"* we find a definition of telehealth that matches our own vision. This report defines telehealth as a broad set of applications using communications technologies to support long-distance clinical care, consumer and professional health-related education, public health, health administration, research, and electronic health records and "telemedicine" as the provision of medical care from a distance using telecommunications technology.

A History of Collaboration

The participating entities have already implemented a number of successful collaborative health information technology projects. These are highlighted below. The HIEM network has felt it important to keep the focus of these efforts on quality improvement, especially for the patient. They have used existing data and national guidelines to set agendas and priorities in telemedicine programs.

Here are some ways HIEM has already measurably implemented these solutions in each of these areas identified by the report, as well as ways the HIEM could expand these solutions in the future as bandwidth is made available:

A. **Long-distance clinical care ("telemedicine").** Our PAC's system has improved patient safety by speeding up the process in which a radiologist can read images to help the provider make a proper diagnosis. We have witnessed lives saved by the timeliness of this system. We have also implemented distance patient exam care. A patient in a rural exam room is "examined" long-distance by a specialist in Kalispell using video conferencing and electronic stethoscopes. This has saved countless hours and dollars in travel, and is especially invaluable for older patients with severe health problems. Very soon we have plans for remote digital mammography, additional telemedicine exam rooms, telepharmacy for locations without 24/7 pharmacists on site, and telepathology for remote diagnosis of tissue

biopsies in conjunction with surgery. The main constraint in implementing more of this is lack of affordable bandwidth to our remote areas, since pictures and video require a large amount of bandwidth.

B. **Consumer & professional health-related education.** Physicians and staff in each of our remote locations have been able to participate in education provided in other facilities, especially in Kalispell. We have also offered several classes to patients for topics such as diabetes management and COPD. We would like to expand our offerings, but again the bandwidth constrains how much of this we can do at any given time.

C. **Public health.** Several of our locations have ongoing public health issues. One of the most notable is Libby, one of the nation's largest Superfund sites. An estimated 2000 residents participate in an ongoing health surveillance project led by the CDC and State Department of Health. The ability to share electronic health information would potentially shave time and expense off these projects; however, because of bandwidth constraints, we have been unable to implement these solutions so far. Our hope is to better do this in the future. We would also like to have better access to databanks and emergency response systems in case of bio-emergencies. Again, our remote locations need additional bandwidth in order to do this.

D. **Health administration.** Two of our remote locations have been able to "piggy back" off the hospital information system in Kalispell. This has saved an estimated $4 million in costs to those two rural hospitals, and it has economies of scale for many administrative functions. We would like to expand this capability to other facilities with outdated systems, but need affordable bandwidth to do so.

E. **Research.** In Libby, there is a huge effort underway to share the information gleaned on asbestos patients with research facilities throughout the world. As one of the areas most lacking in bandwidth, struggling with one of the most complex public health challenges in the country, this effort has been dependent on paper record sharing to date. Our hope is that future information may be transmitted electronically in real time for researchers spread across the globe to effectively study the cohort population in Libby.

F. **Electronic health records.** One of the HIEM's top priorities is to have a shared single-patient view electronic health record accessible for all

providers within our network. We have studied various technical solutions and have chosen to replicate a system developed at Vanderbilt University in Nashville. We believe this will offer safer, more effective care to our patients, reduce costs throughout our network, and save lives by having the right information available when needed.

9. Provide a project management plan outlining the project's leadership and management structure, as well as its work plan, schedule and budget?

RURAL HEALTH CARE NETWORK PILOT PROGRAM PROJECT

Leadership

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1. Year One/Phase 1:

$9 million

Goals:
This year-long phase will provide the initial high capacity connections among HIEM member nodes on the western side of the mountains.

Objectives:

- Phase One also includes bidding and completion of a comprehensive engineering study based in part upon the preliminary study completed in the past 20 days by HIEM. This study will provide gross level design objectives, and more detailed equipment purchase needs.

Activities:
Each facility will be fashioned with equipment required to utilize and terminate a fiber optic cable.

Anticipated Outcomes:
Approximately 265 miles of fiber optic cable will be laid in this phase. All fiber optic runs which are in excess of 35 miles will be bisected and supported with a telecommunications hut.

How Outcomes May Be Measured:

- Confirmation of completion of items identified on timeline.
- HIEM Meeting Minutes confirming approval
- Documentation/Signed Contracts
- Documentation

Performance Period:
Phase 1/Year 1

Responsible Organization/Part
HIEM Board of Directors

2. *Year Two/Phase 2:*

$7 million

Goals:
HIEM seeks to accomplish Phase 2 in one year and will provide the initial high capacity connections among HIEM member nodes on the eastern side of the mountains (Continental Divide).

Activities:
- Approximately 90 miles of fiber optic cable will be laid in this phase.
- Each facility will be fashioned with equipment required to utilize and terminate a fiber optic cable.

Anticipated Outcomes:
All fiber optic runs in excess of 35 miles will be bisected and supported with a telecommunications hut.

How Outcomes May Be Measured:
- To be determined during phase 1
- Documentation/Signed Contracts
- Documentation

Performance Period:
Phase 2/Year 2

Responsible Organization/Part
HIEM Board of Directors

3. *Year Three/Phase 3:*

$6 million

Goals:
In Year 3/Phase 3 HIEM intends to provide a physical fiber path which will facilitate connectivity between the Western and Easter Arc.

Activities:
All facilities provided with fiber connectivity on the Western Arc will now be able to interchange data with all the facilities on the Eastern Arc.

Anticipated Outcomes:
Approximately 100 miles of fiber optic cable will be laid in this phase.

How Outcomes May Be Measured:
- To be determined during phase 1
- Documentation/Signed Contracts
- Documentation

Responsible Organization/Part
HIEM Board of Directors

4. Year Four/Phase 4:

$3 million

Goals:
In Year 4/Phase 4 HIEM intends to provide a true redundant physical path on the western side of the mountains (Continental Divide) following driving routes from Libby to Plains.

This path will serve to accommodate and even traffic flows at all times and will accommodate all traffic flows should service, for any reason, be interrupted on the paths provided during the Western Arc phase of the project.

Activities:
All facilities provided with fiber connectivity will now be able to interchange data.

Anticipated Outcomes:
Approximately 115 miles of fiber optic cable will be laid in this phase.

How Outcomes May Be Measured:
- To be determined during phase 1
- Documentation/Signed Contracts
- Documentation

Responsible Organization/Part
HIEM Board of Directors

5. Year Five/Phase 5

$1 million

Goals:
Year5/Phase 5 will provide a true redundant physical path on the eastern side of the mountains (Continental Divide) following driving routes from Heart Butte (a community located on the Blackfeet reservation, severely isolated by geography and technology limitation, 26 miles south of Browning) to Conrad.

Activities:
This path will also serve to accommodate and even traffic flows at all times and will accommodate all traffic flows should service, for any reason, be interrupted on the paths provided during the Eastern Arc phase of the project.

Anticipated Outcomes:
- Approximately 93 miles of fiber optic cable will be laid in this phase.
- The network as proposed or amended is complete.

How Outcomes May Be Measured:
- To be determined during phase 1
- Documentation/Signed Contracts
- Documentation

Responsible Organization/Part
HIEM Board of Directors

Determining a Proposed Budget
Budget numbers for each of the five phases reflect all aspects of costs associated with each phase. However, until an engineering study and blueprint can be completed and established, HIEM has no specific budget available for FCC consideration. However for this proposal we focus heavily upon known costs, such as costs related to build each network mile across our service area, based on difficulty related to terrain and topography. The figures also reflect engineering costs for technical and construction services.

Engineering costs are estimated for the entire project to be no more than 15 percent of the entire project and are included in the budget estimates.

Estimates for fiber network construction are estimated based upon the running mile, and range from $17,000 to $90,000 per mile, dependent upon the relative difficulty associated with topography and easement issues.

In choosing a complete build option, prohibitive carrier pricing estimates taken as part of the pre-engineering assessment and some issues related to tariff also affected our recommendation for a complete build to the Commission.

Real costs for equipment can only be estimated for the purpose of developing project parameters but cannot be known today due to discounts for quantity purchasing and contracts that may be developed upon completion of an engineering study in Year1/Phase 1.

Additional Background Regarding Costs Which Affect This Proposal

A Preliminary Assessment

Once again, in preparing this proposal on behalf of the FCC, the HIEM implemented a thorough pre-engineering assessment during the past 20 days, conducted by HIEM, technology and engineering staff designated by the HIEM so as to better determine the current status and costs to develop network connectivity between HIEM members and other potential network members.

Staff accomplished this inventory in a series of comprehensive interviews completed in the field during a week-long tour of each potential node location, and held additional discussions with other relevant parties.

The HIEM proposal brought designates that the location of each primary member organization or facility should essentially become a primary node for this proposed *Rural Health Care Pilot Program* network.

Ultimately, this pre-engineering groundwork is intended to offer the FCC a more complete snapshot of the proposed project, including scale, scope and depth.

Again, the HIEM is a non-profit organization comprised of rural health care providers in Montana. HIEM possesses limited resources and serves rural and medically underserved Montanans. The HIEM takes seriously the opportunity to promote a bold, comprehensive, but well-drawn proposal to the Commission to improve the delivery of quality medicine and care to Montanans.

Therefore in a sincere effort to most thoroughly vet this proposal on behalf of the FCC, HIEM made a specific decision to self-fund this initial phase, to put forth the very best possible proposal for consideration by Commission staff, Chairman Martin and Commissioners Copps, Adelstein, Tate and McDowell who have graciously sponsored this bold pilot program.

10. Indicate how the telemedicine program will be coordinated throughout the state and region.

As indicated in the first section, the project will be managed by the HIEM Board and staff. Any requests from member facilities will be submitted in writing to the Directors and prioritized at the HIEM Board level.

HIEM members maintains formal membership and formal and informal contact with other statewide initiatives related to health information technology projects.

11. Indicate to what extent the network can be self-sustaining once established?

Revenue

The HIEM goals are based upon long-term viability of the network and therefore require a steady and robust stream of revenue which includes both structured fees for access to the network based upon membership and usage and other revenue generating options. These include:

1. Membership Fees: Dues paid by those organizations with representation on the HIEM board.

2. Subscription Fees: Monthly or yearly fees charged to organizations enlisting the services of the EHR.

3. Per Record/Transaction Fee: Usage fee charge to organizations on a per record basis. Currently, the HIEM is assessing the number of claims filed between the six network partners to establish a benchmark for potential revenue which may be generated by these types of user fees.

4. Personal Record Fee: One of the benefits of the proposed solution is the capability for consumers to access their own personal electronic health record via the internet. A nominal yearly access and maintenance fee of $1 will be charged to consumers wishing to utilize this service.

As part of Year One activities, the HIEM will perform extensive market research and analysis, to determine a fair and reasonable fee structure for services for HIEM members, non-profit non-HIEM members and for-profit non-HIEM members and others.

Ultimately, the network is strengthened by each contributing organization's membership and dues and therefore dues-paying members and fee for service end-users will be recruited to support the HIEM organizational structure and to assist with the ongoing costs associated with long-term sustainability.

Finally, to reiterate additional revenue generating opportunities previously outlined in ***Section Five*** of this proposal, HIEM also seeks to generate matching funds as dictated by the grant to pay for costs not covered by the fund, including long-term sustainability of the network itself.

1. HIEM anticipates assessing each network member a rental fee for node equipment and a service fee for bandwidth. Additionally, HIEM will also provide miscellaneous contracted network services to each HIEM member and therefore also seeks to become a provider of miscellaneous network services and a clearing house for network trouble tickets for HIEM network members and users.

2. In later phases of network management, HIEM may seek to create comprehensive service agreements and network service agreement with HIEM to maintain not only their connection to the HIEM network but also to maintain each member's internal phone and computer networks. HIEM could begin to collect revenue from its members to sustain essential operations, allowing members to benefit from consistent service and a common base of experience, knowledge and expertise regarding equipment management. For example, it may become known by HIEM network staff that one node location has had a bad equipment experience. They can eliminate any bad equipment experience at a second location. The proposed HIEM network as a whole will benefit as HIEM will support the structure and evolution of each individual member's internal network to one consistently enforced set of implementation and labeling standards. Eventually this could foster uniformity and interconnectivity of systems within the individual organization, the network itself, across regions and across the nation. Ultimately this may also allow for greater levels of integration. Network members would be able to more easily leverage scale in purchasing and could disperse costs of costly network and administrative services. Additionally, the smaller locations could greatly benefit from the shared expertise and practices that could be developed by HIEM on their behalf.

3. HIEM also seeks to investigate the opportunity to begin providing services as an ISP to network members and end-users thus reducing overall network access costs.

4. HIEM intends to pursue opportunities which support allowing the pilot network to evolve to become a carrier. Once again, the network connectivity speeds which HIEM proposes approach (OC12+). Therefore, HIEM could easily make the most commonly available services for phone, cable and internet services available to end-users who meet the qualifications for any other member or user of HIEM services. Additionally, the HIEM pilot network seeks to develop a network containing "dark" or unutilized fiber optic strands. Ultimately, this could allow for network traffic to not only be isolated logically, via router software configurations, but also physically isolated by lighting

spare "dark" fiber within the backbone cable itself. HIEM may be able to test and utilize this potential opportunity expressly by carrying traffic for other operating companies either already servicing an area, or looking to expand to another area or region, where HIEM node resides, in compliance with FCC rules and guidance.

5. The pilot project proposed by HIEM focuses on a bold strategy to build a true redundant network and will also likely create a unique homogenous, contiguous and controlled environment which can be leveraged to support IT and telehealth related research. Network bandwidth could be isolated or provisioned to be sold to companies and researchers who wish to experiment and test deploy products, particularly those application that are affected by latency issues or designed to operate simultaneously at multiple locations. This option would be in keeping with the health mission of the HIEM members but would require marketing efforts within the academic and commercial research communities.

6. Finally, the network pilot project proposed by the HIEM indicates significant capacity to move impressive volumes of data. This new network could therefore serve the local, regional, statewide and international health community with health care specific records & image storage and disaster recovery services.

7. Data centers of this type may require joining with new partners and participants or investing in additional capital expenditures and marketing efforts to reach additional qualified users.

   A combination of any or all of these measures will be utilized by the HIEM to fund ongoing and long-term sustainability of the proposed network.

14. Thank You

On behalf of rural health care providers across our service-area and the nearly 150,000 constituents we serve, the HIEM Board of Directors wish to commend Commission staff, Chairman Martin and Commissioners Copps, Adelstein, Tate and McDowell for developing and promoting on our behalf, a visionary opportunity which seeks to address the unique challenges we struggle with daily as rural providers. Thank you so much.

Again, thank you for your thoughtful consideration of our proposal.

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